CURRICULUM VITAE

Luca Naponiello was born on June 4, 1992, in Salerno, Italy. He completed his early education in the same province, graduating from Liceo Scientifico A. Gallotta in Eboli with top marks (100/100) in 2011. He then relocated to Florence to pursue his passion for astronomy, earning a Master's Degree in Astrophysics from the Università di Firenze in early 2018 (with a score of 107/110). Subsequently, he moved to Rome for his doctoral studies, where he successfully obtained his PhD in Astronomy *cum Laude* from the Università “La Sapienza” and “Tor Vergata” in late 2023.

RESEARCH POSITIONS

- **2024–present:** Postdoctoral Researcher at INAF-OATo (AdR; EXODEMO project). Focus on the occurrence of cold Jovian exoplanets in systems with small transiting planets, radial velocity (RV) / transit data analysis, and integration of Gaia astrometric data.
- **2021–2023:** Research Fellow, Ariel Space Mission, UniFI-OAA. Configuration and Requirements Manager for the Ariel Telescope Assembly.
- **2020–2023:** PhD in Astronomy (*cum Laude*), Università Sapienza e Tor Vergata, Rome. Thesis: *The hunt for short-period exo-Neptunes and their characterization via radial-velocity follow-up of TESS planetary candidates*.
- **2021:** Research Fellow, Ariel Space Mission, INAF–OAP & UniFI–OAA. Structural model management for the Ariel telescope prototype.
- **2019–2021:** Research Fellow, Ariel Instrument Control Unit (ICU) Study, UniFI–OAA. Supported the design of the ICU architecture and interfaces.
- **2018–2019:** Research Fellow, METIS - Solar Orbiter, INAF-OACN. Developed an IDL-Python data reduction pipeline for the METIS coronagraph.

RESEARCH PROFILE & EXPERTISE

Luca is an Early Career Researcher with strong expertise in the detection and dynamical characterization of exoplanetary systems. His technical skills include signal processing, Bayesian inference, and Monte Carlo simulations applied to photometric (transits and transit time variations - TTV), spectroscopic (RVs), and astrometric datasets. His scientific interests revolve around planet discovery and evolution, specifically investigating the architectures of multi-planet systems, the Neptune desert, and the connection between small close-in planets and outer giants. He has direct experience in breaking dynamical mass-eccentricity degeneracies through N-body modeling and combined TTV+RV analyses.

OBSERVATIONAL GRANTS

Luca successfully secured and led several highly competitive observational programs as Principal Investigator (PI) or Co-PI on top-tier international facilities. *Note: Due to space constraints, the following list excludes his numerous active roles as Co-Investigator across several international observational programs (e.g., HARPS-N within GAPS, NEID and PFS within U.S. CAPS).*

- PI – *Decoding the Cold Jupiter-Small Planet Connection*. HARPS at ESO 3.6m (Period 117, 63 hours).
- PI – *Unveiling dynamical interactions in TOI-1859 and TOI-4495*. HARPS-N at TNG (Period AOT53, 22 hours).
- PI – *The HARPS-N Hot Neptune Initiative*. HARPS-N at TNG (Periods AOT49 and AOT50, 71 hours total).

- PI – *Probing the diversity of Neptune-sized exoplanets*. HARPS at ESO 3.6m (Period 113, 41.25 hours).
- PI – *Investigating the giant TTVs around a Solar-type star*. CHEOPS Discretionary Programme (17 orbits).
- Co-PI – *The origin of TOI-5800 b's eccentricity: HEM or a perturbing companion?* HARPS at ESO 3.6m (Period 117, 7 hours).
- Co-PI – *The First Neptune Desert Progenitor System*. CHEOPS Discretionary Programme (30 orbits).

INTERNATIONAL COLLABORATIONS, SUPERVISION & ACADEMIC ACTIVITIES

Luca is actively involved in major international networks, including the **PLATO** Working Group on Planet Occurrence Rates, the **GAPS** Collaboration (where he's responsible for the Neptunian and Transit Working Packages), the **HARPS-N** Collaboration (where he's co-leader of the small planet - cold Jupiter follow-up program and member of the candidate selection group), and the **TESS** Follow-up Observing Program (TFOP SG1). He is highly active in the academic environment: he currently co-supervise one PhD student (Sapienza University, expected to end in late 2026), and he has successfully co-supervised Master's and Bachelor's theses (UniTO, in 2024 and 2025). He has also served on the Local Organizing Committees (LOC) for several conferences, including Exoitaly in 2025, the 2026 Cold Jupiters conference in Turin, and the 2016, 2018, and 2022 Chianti Topics workshops in Florence.

SELECTED PUBLICATIONS

Luca has authored or co-authored more than 35 peer-reviewed articles since 2021. Below is a selection of manuscripts for the past 3-years, including two publications in Nature:

1. Jones, M., **Naponiello, L.,** Trifonov, T., et al. (2026). *A distant brown dwarf coplanar to a warm Jupiter and a hot super Earth*. Nature, in press.
2. **Naponiello, L.** (2026). *A homogeneous TTV investigation of all TESS systems with a confirmed single transiting planet*. A&A, 705, A5.
3. **Naponiello, L.**, Leonardi, P., Damasso, M., et al. (2026). *A 34.6-d transiting sub-Neptune and TTVs in the TOI-1422 planetary system*. MNRAS, 545(2), staf2030.
4. Bonomo, A. S., **Naponiello, L.**, Sozzetti, A., et al. (2026). *The GAPS programme at TNG-LXXI. A sub-Neptune suitable for atmospheric characterization in a multiplanet and mutually inclined system orbiting the bright K dwarf TOI-5789*. A&A, 707, A197.
5. **Naponiello, L.**, Vissapragada, S., Bonomo, A. S., et al. (2025). *The Hot-Neptune Initiative (HONEI)-I. Two hot sub-Neptunes on a close-in eccentric orbit (TOI-5800 b) and a farther-out circular orbit (TOI-5817 b)*. A&A, 701, A79.
6. Manni, F., **Naponiello, L.**, Mancini, L., et al. (2025). *The Hot Neptune Initiative (HONEI)-II. TOI-5795 b: A hot super-Neptune orbiting a metal-poor star*. A&A, 701, A230.
7. Bonomo, A. S., **Naponiello, L.**, Pezzetta, E., et al. (2025). *Cold Jupiters and small planets: Friends, foes, or indifferent? A search for correlations with the largest exoplanet samples*. A&A, 700, A126.
8. Damasso, M., **Naponiello, L.**, John, A. A., et al. (2025). *Discovery of a multi-planet system orbiting the aged Sun-like star HD 224018*. A&A, 702, A118.
9. **Naponiello, L.**, Bonomo, A. S., Mancini, L., et al. (2025). *The GAPS programme at TNG: LXIV. An inner eccentric sub-Neptune and an outer sub-Neptune-mass candidate around BD+00 444 (TOI-2443)*. A&A, 693, A7.
10. **Naponiello, L.**, Mancini, L., Sozzetti, A., et al. (2023). *A super-massive Neptune-sized planet*. Nature, 622, 255-260.